Spring Flood Outlook for Iowa

National Weather Service

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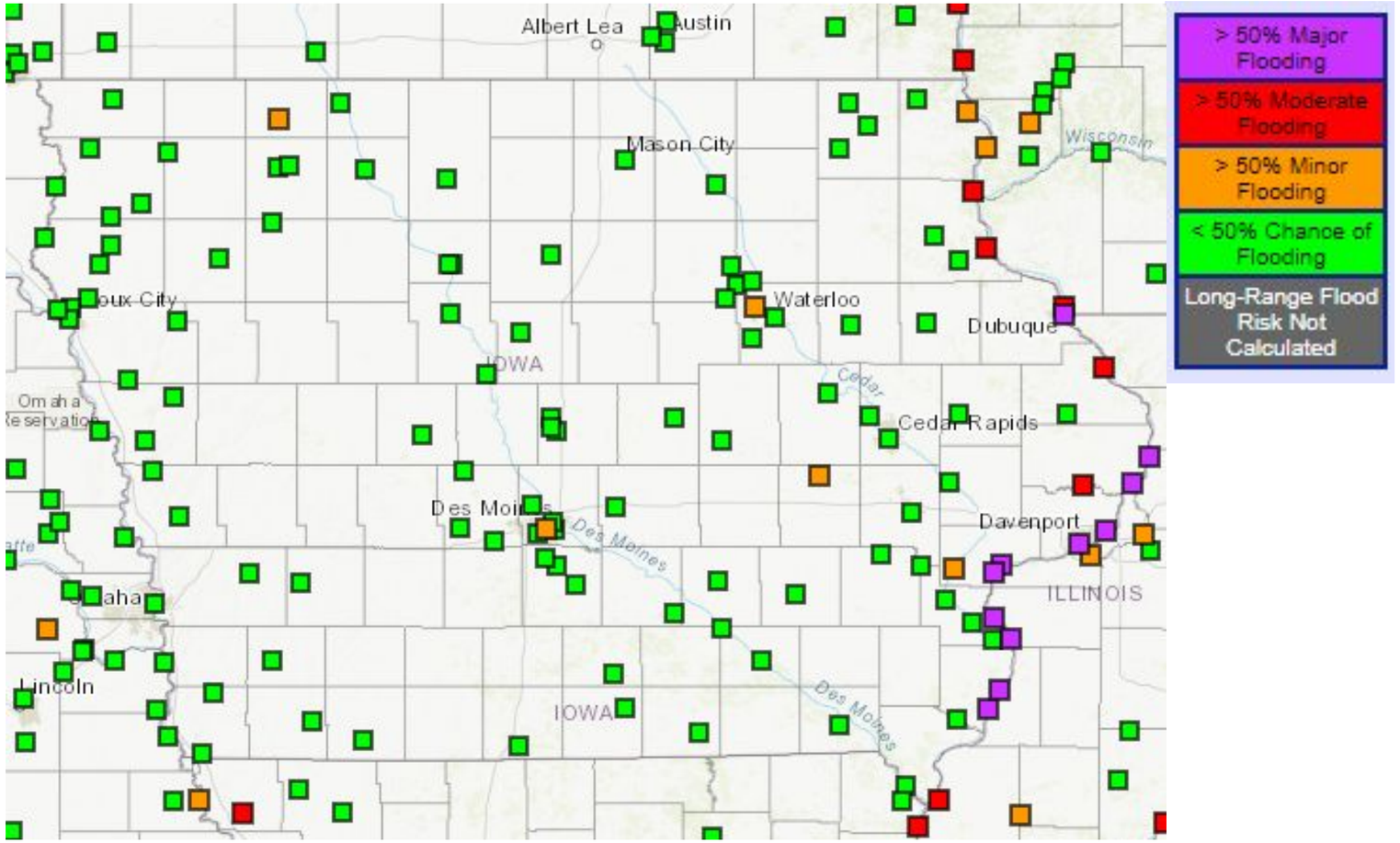
February 23, 2023

Spring 2023 Flood Outlook for Iowa

Overview

Key Messages

- Above normal spring flood threat for the Mississippi River. Near to below normal threat for the rest of the state.
- Future weather–including amount, frequency and extent of precipitation as well as rate of snowmelt–can be big factors in any potential spring flood threat.
- Points highlighted in orange, red or purple have a >50% chance of reaching minor flood stage over the next 90 days.
- **What about the storm system on 2/22 - 2/23?** The heavy precipitation from this system (especially in Minnesota and Wisconsin) has lowered the confidence in the outlook numbers slightly, especially for the Mississippi River.



Flood risk from late February through late May

Spring 2023 Flood Outlook for Iowa

Flood risk by river as of 2/22/2023

River	Spring Flood Risk
Mississippi River above Rock River (in Illinois)	Above Normal
Mississippi River below Rock River (in Illinois)	Above Normal
Missouri River	Near to Below Normal
Tributaries to Mississippi River in Eastern Iowa	Near Normal
Tributaries to Mississippi River in Central Iowa	Near Normal
Tributaries to Missouri River in Iowa	Near to Below Normal

Future weather–including amount and timing of precipitation as well as rate of snowmelt–can be big factors in any spring flood threat.

National Weather Service 2023 Spring Flood Outlook Schedule

2/9/2023

2/23/2023

3/9/2023

Spring 2023 Flood Outlook for Iowa

Spring flood element checklist as of 2/22/2023

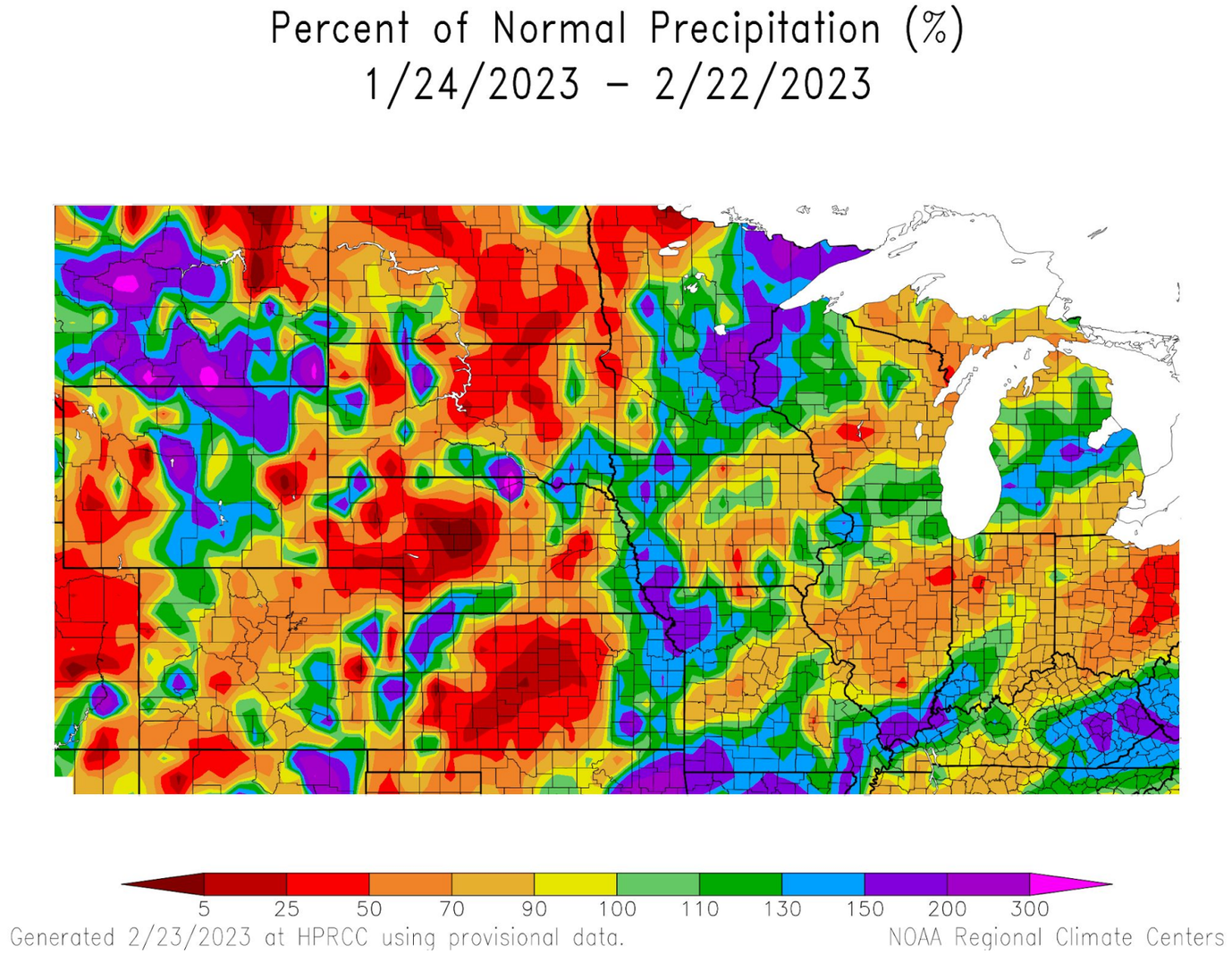
Below is the spring flood element checklist. The individual elements appear on the following slides. Future weather–including amount and timing of precipitation as well as rate of snowmelt–can be big factors in any spring flood threat. Heavy precipitation, rain on snow and a rapid snow melt will increase the risk. Little precipitation or a slow snow melt will lessen the risk. Flooding from ice jams is a minimal risk this year, but there may be some localized issues.

Element	Impact on Potential Spring Flooding	Link to Latest Information
River levels	Neutral	USGS WaterWatch
Soil moisture	Neutral to decreased risk	CPC Soil Moisture
Snowpack/snow water equivalent	Neutral; increased risk for the Mississippi River and the Des Moines River above Saylorville Lake	Snow Water Equivalent Analysis
Frost depth	Neutral	Frost Depth Map
Monthly temperature outlook	Neutral	CPC Outlooks
Monthly precipitation outlook	Neutral to increased risk	CPC Outlooks

For your reference, here are links to the current Drought Monitor as well as the Seasonal Drought Outlook.

Spring 2023 Flood Outlook for Iowa

Percent of normal precipitation, past 30 Days



Above and below normal across Iowa

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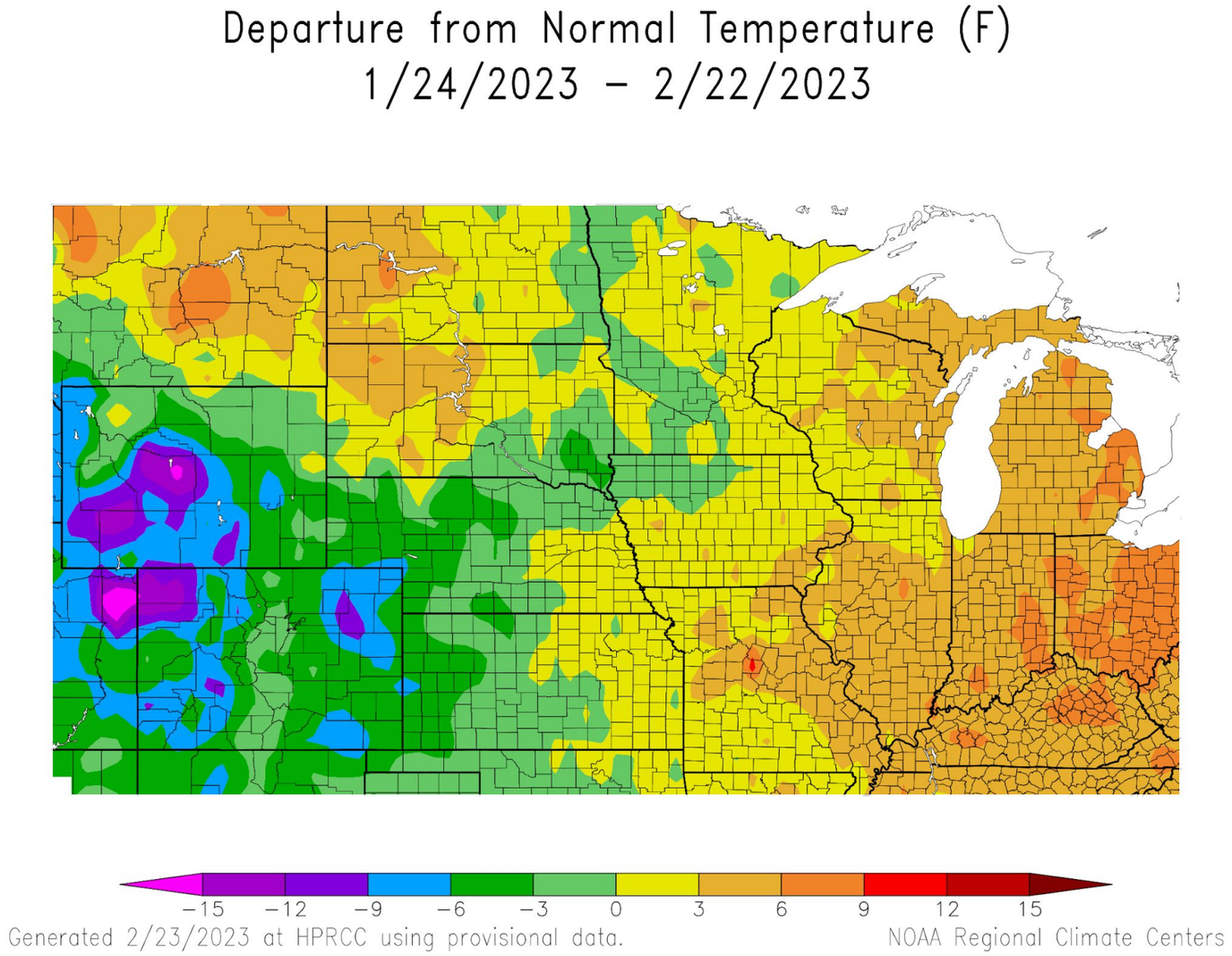
Departure from normal temperature, past 30 Days



Mainly above normal across Iowa, except the northwest

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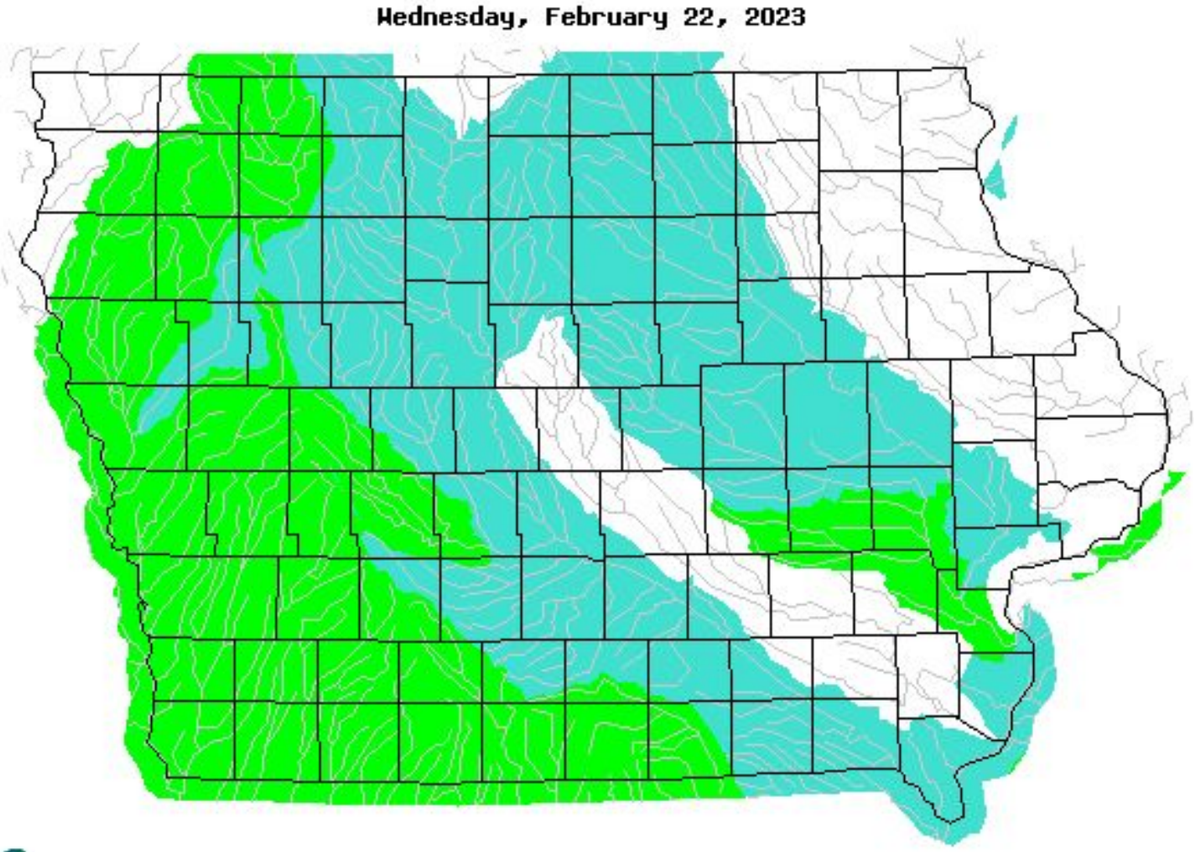
River level percentiles



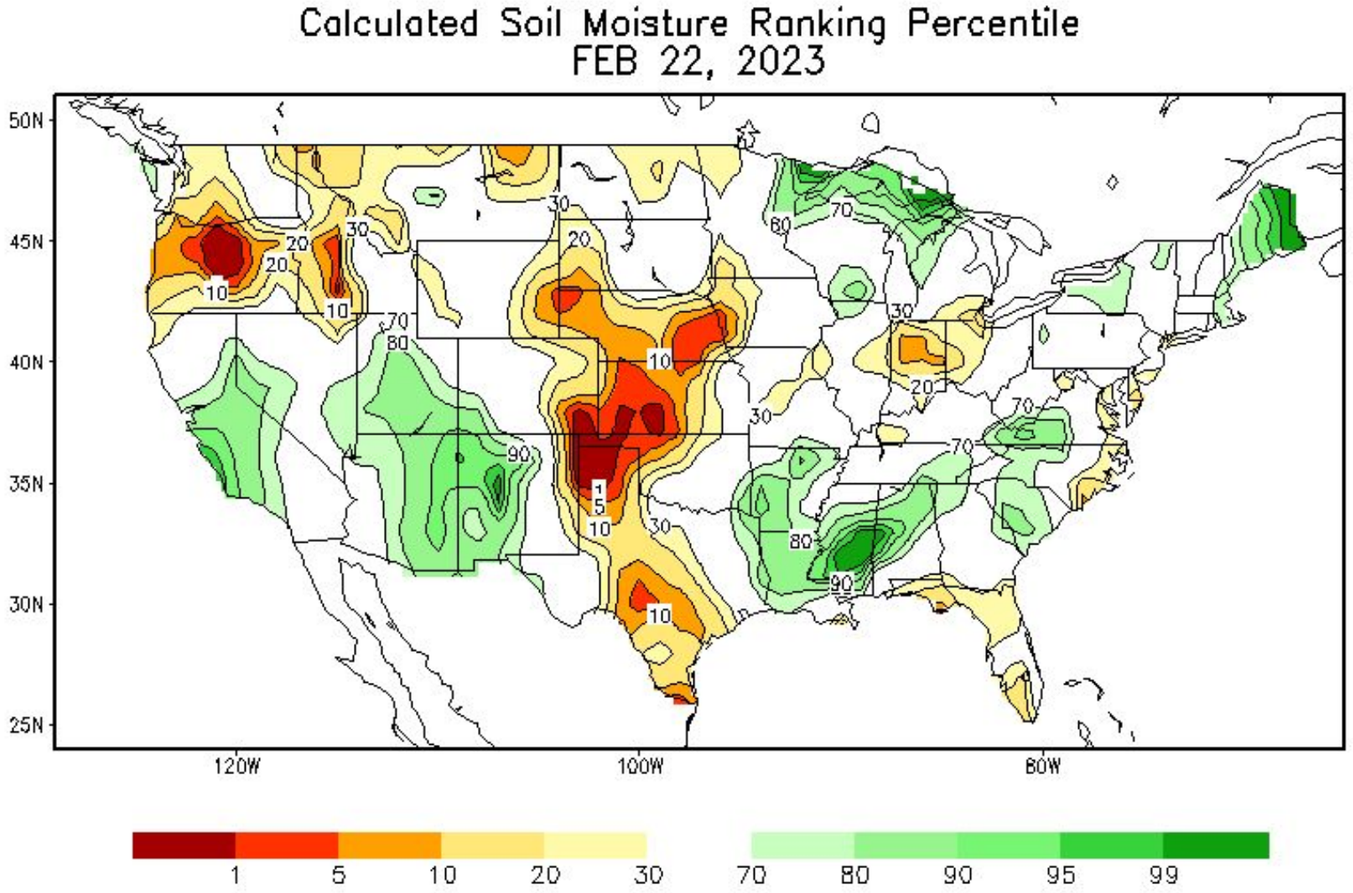
USGS

Explanation - Percentile classes							
Low	<10	10-24	25-75	76-90	>90	High	No Data
	Much below normal	Below normal	Normal	Above normal	Much above normal		

Generally near to above normal stream flows across Iowa

Spring 2023 Flood Outlook for Iowa

Soil moisture percentiles



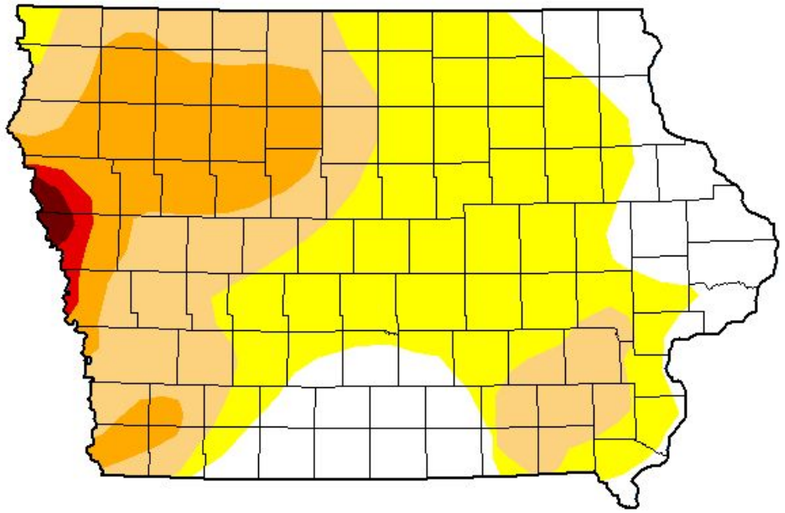
Near to below normal across Iowa

Spring 2023 Flood Outlook for Iowa

Drought Monitor

U.S. Drought Monitor

Iowa



February 21, 2023

(Released Thursday, Feb. 23, 2023)

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	20.33	79.67	40.89	16.82	1.56	0.57
Last Week *02-14-2023*	19.85	80.15	53.34	27.98	8.61	0.57
3 Months Ago *11-22-2022*	7.36	92.64	73.30	29.84	12.01	0.57
Start of Calendar Year *01-03-2023*	10.69	89.31	66.66	29.43	8.83	0.57
Start of Water Year *09-27-2022*	20.90	79.10	45.05	22.25	5.07	0.02
One Year Ago *02-22-2022*	19.54	80.46	27.79	0.00	0.00	0.00

Intensity:

- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to https://droughtmonitor.unl.edu/About.aspx

Author:

Richard Heim
NCEI/NOAA

droughtmonitor.unl.edu

Category	Historically observed impacts
D0	Corn shows drought stress; soil is dry
D1	Soybeans abort pods; corn test weights are struggling
	Grasses are brown; more grass fires occur; burn bans are issued
	Pond levels decline
D2	Dryland corn has extremely low yields; commodity shortages are noted; livestock is stressed
	Fire danger is high
	Fewer mosquitoes are observed
	Surface water levels are low; algae blooms increase; voluntary water conservation is requested
D3	Pastures are dry; producers sell cattle; crops are tested for toxins; crops have pest infestation
	Seasonal allergies are worse; farmers are stressed about high feed prices
	Trees drop leaves; acorns are underdeveloped
	Warm water leads to fish kills; streambeds are low to dry
D4	Row crop yields and forage production have significant impacts
	Extreme measures are taken to conserve water
	Aquatic invertebrates in waterways increase

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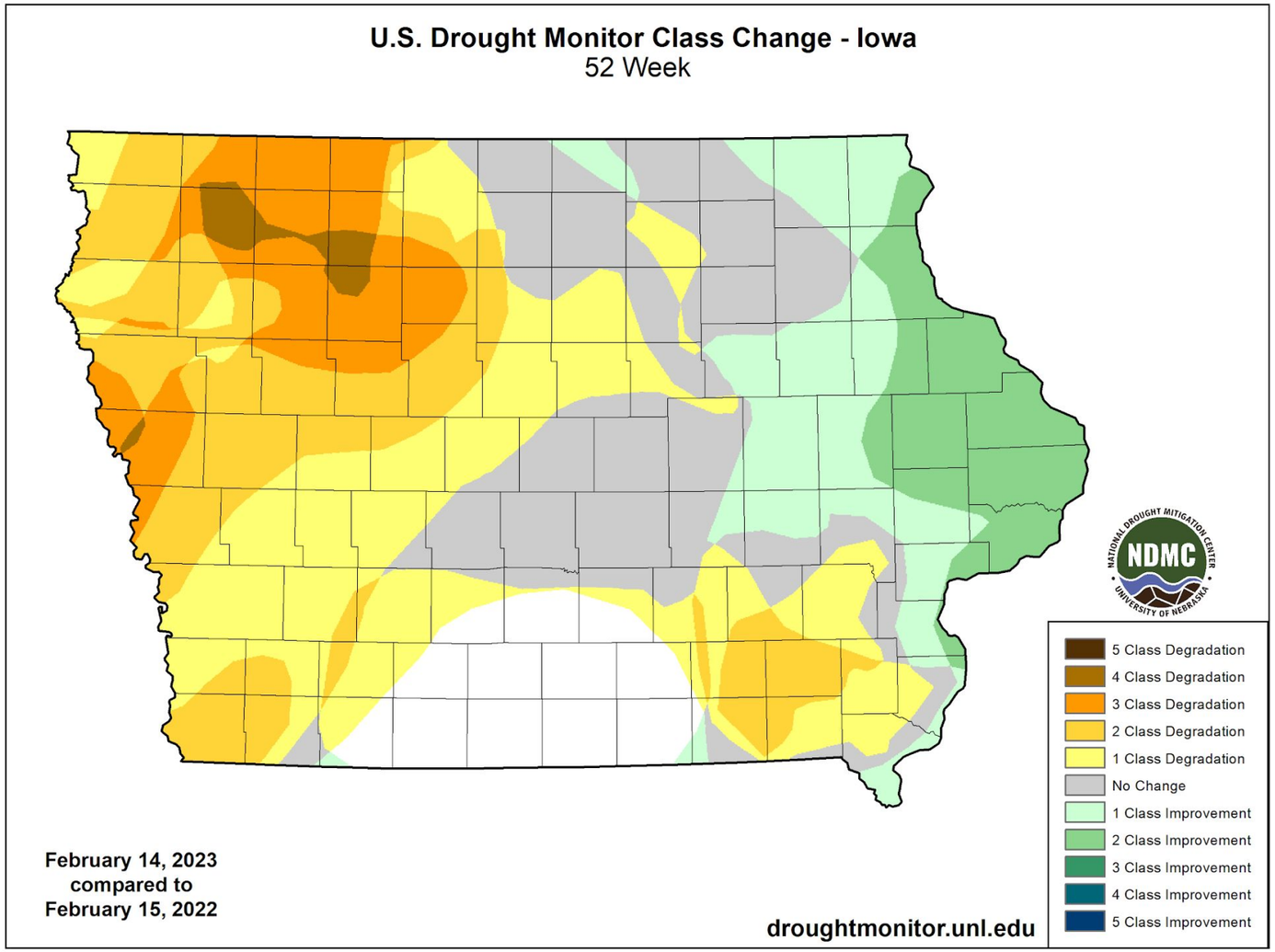
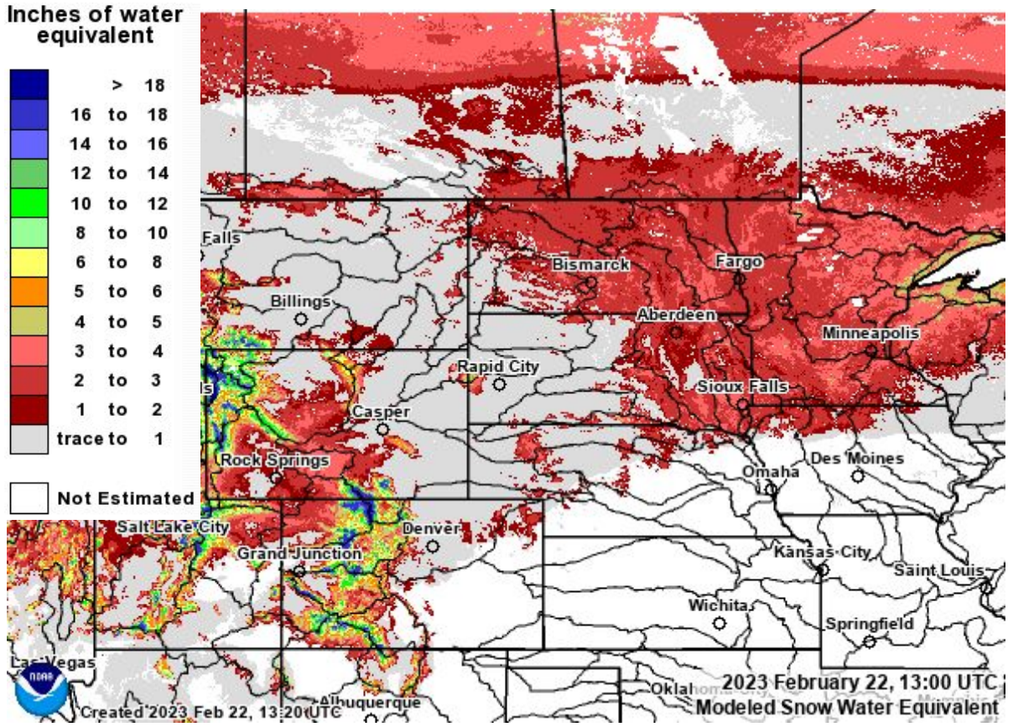
Drought Monitor class change, 1 year



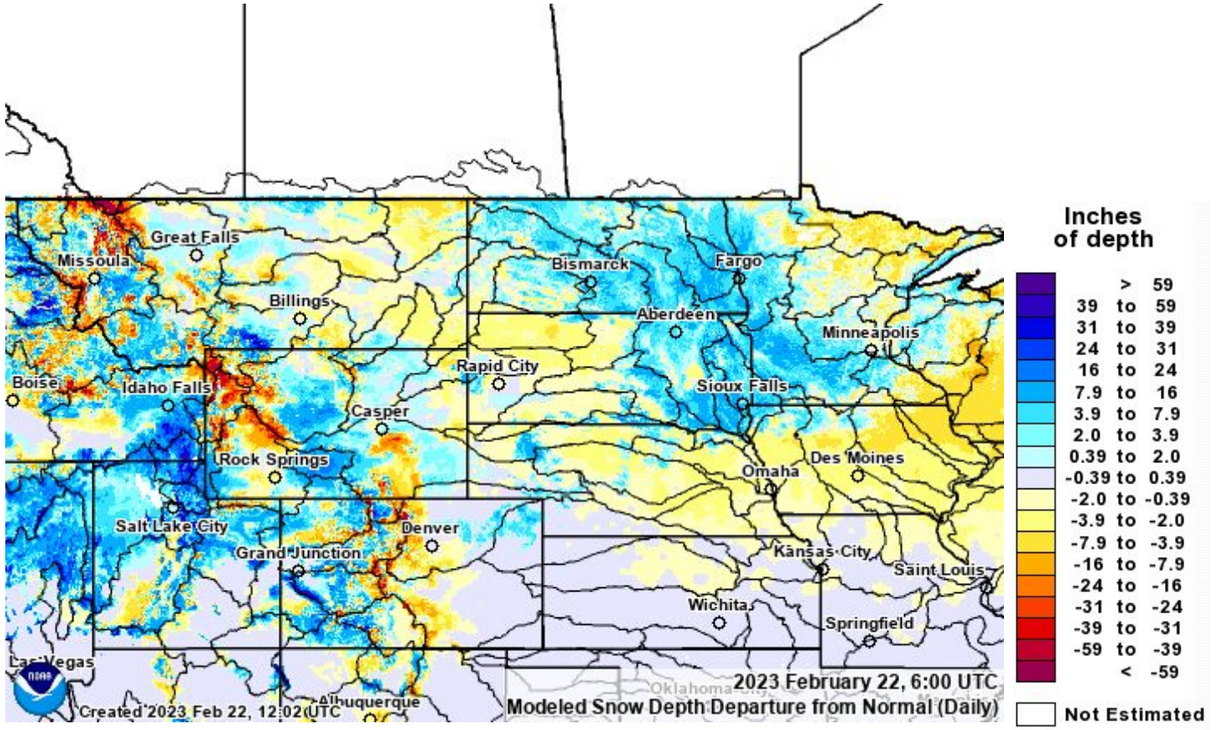
Improvement across portions of eastern Iowa; worsening to no change elsewhere

Spring 2023 Flood Outlook for Iowa

Snowpack water equivalent and snow depth vs. normal, 2/22/2023

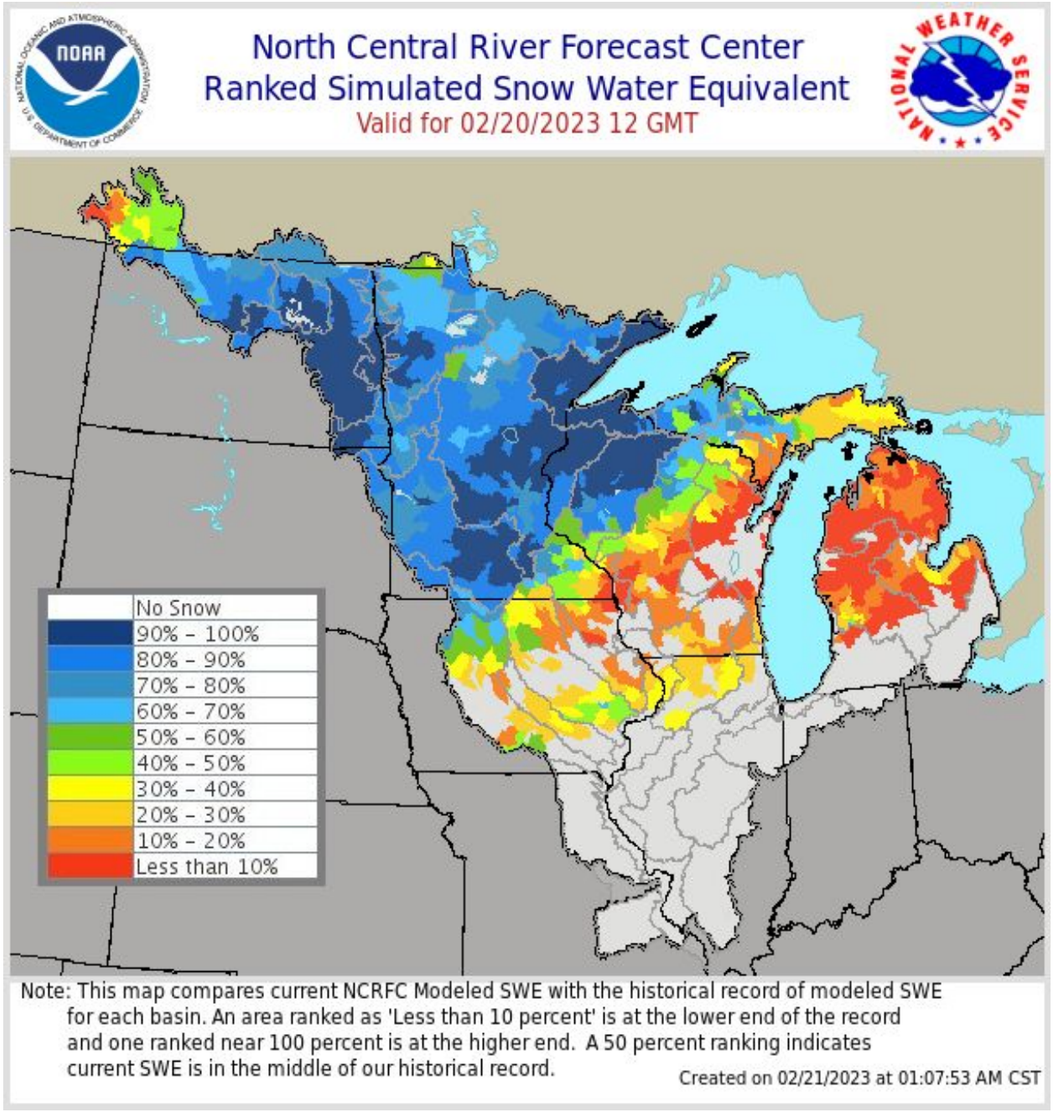


Does not include the 2/22-2/23 winter storm



Spring 2023 Flood Outlook for Iowa

Ranked snow water equivalent (Percentiles)



Very high compared to climatology across the upper Des Moines and Mississippi River basins; near to below normal elsewhere

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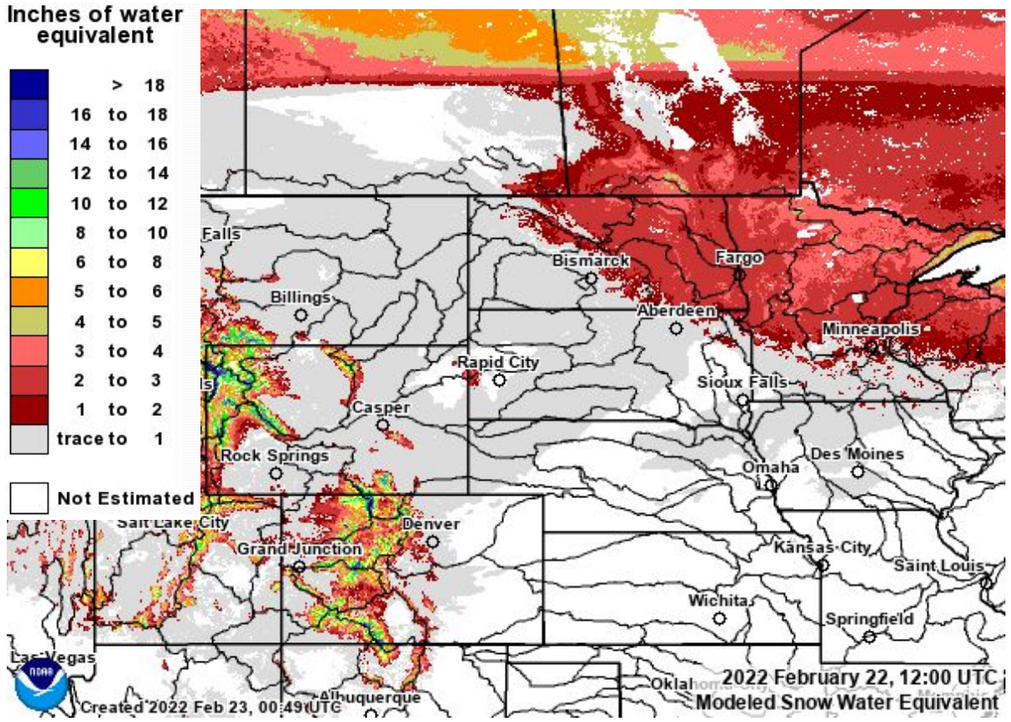
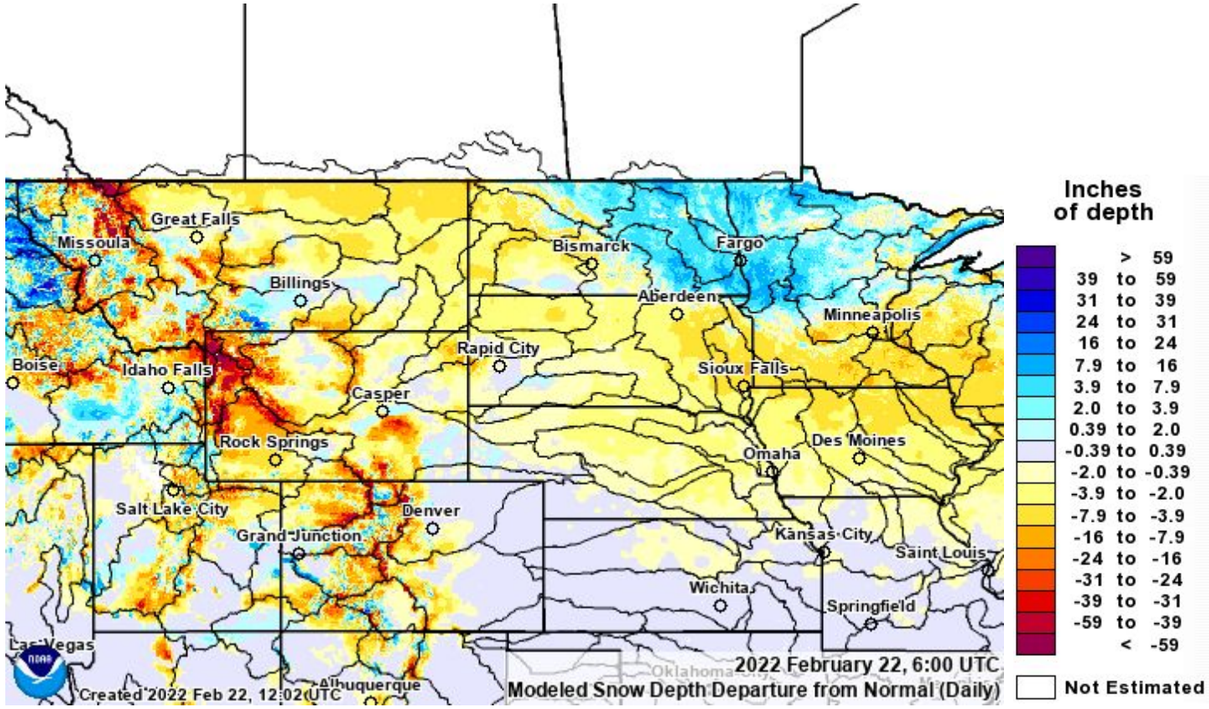
Snowpack water equivalent and snow depth vs. normal, 2/22/2022





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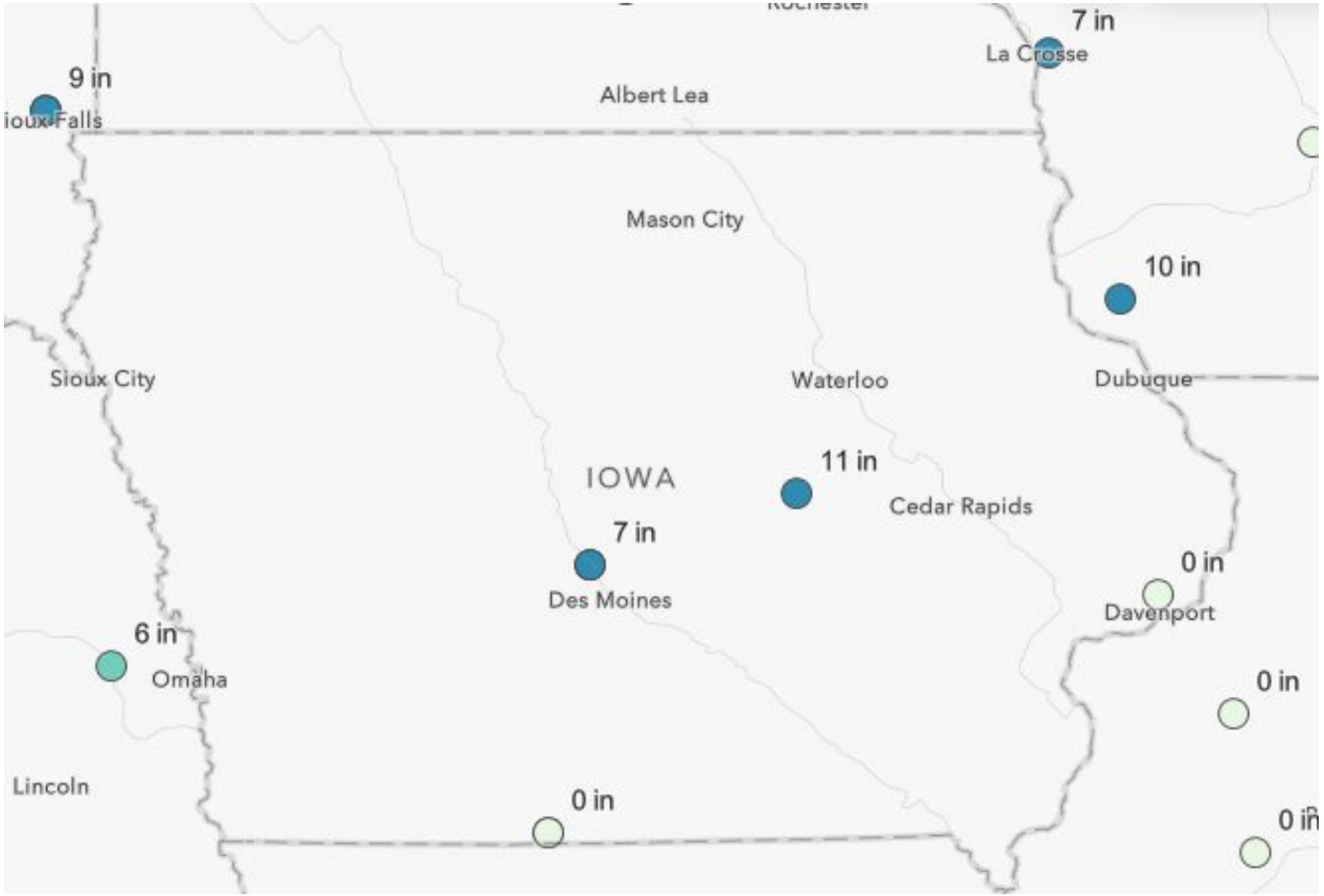
Frost depth as of 2/22/2023



Little to no frost depth across southeast and south central Iowa

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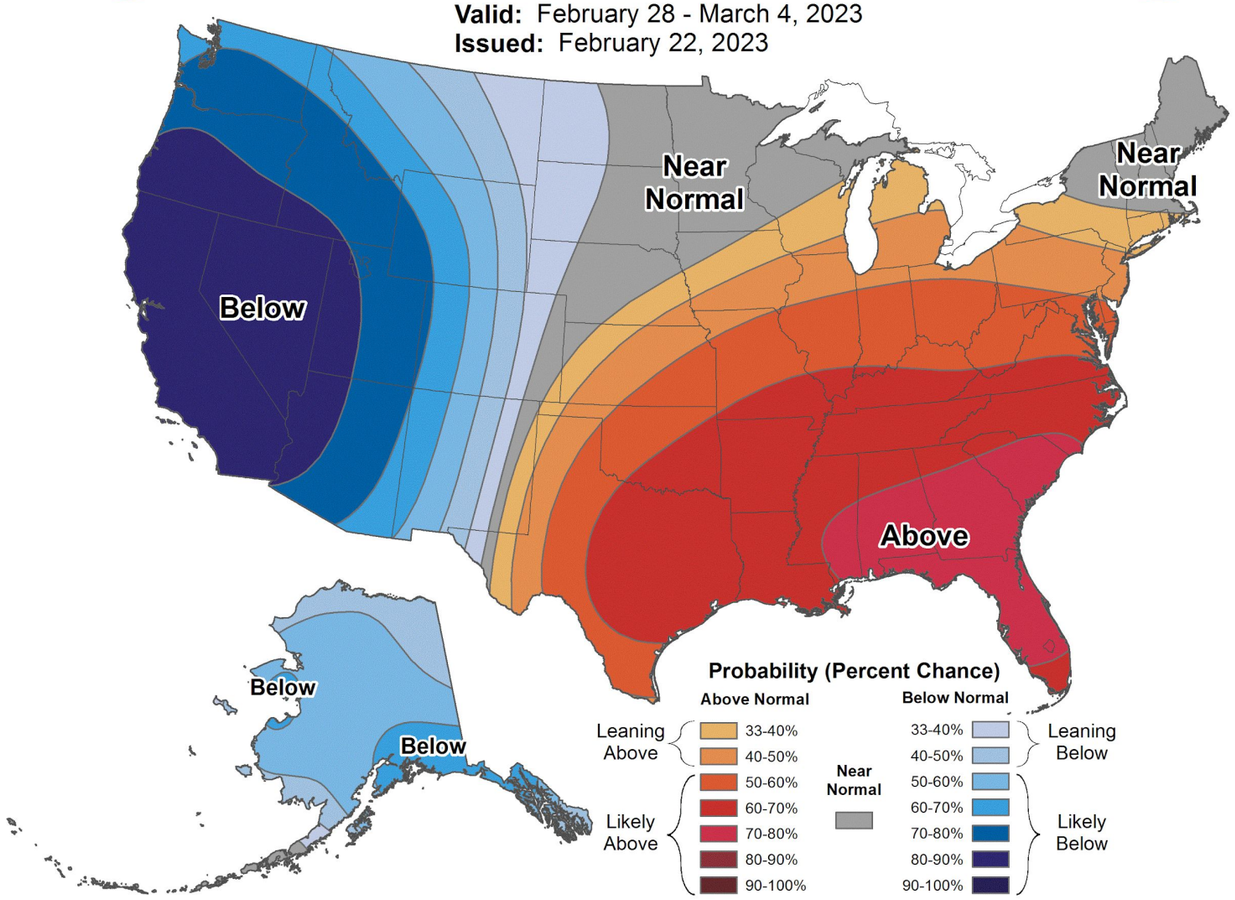
6-10 day temperature and precipitation outlooks

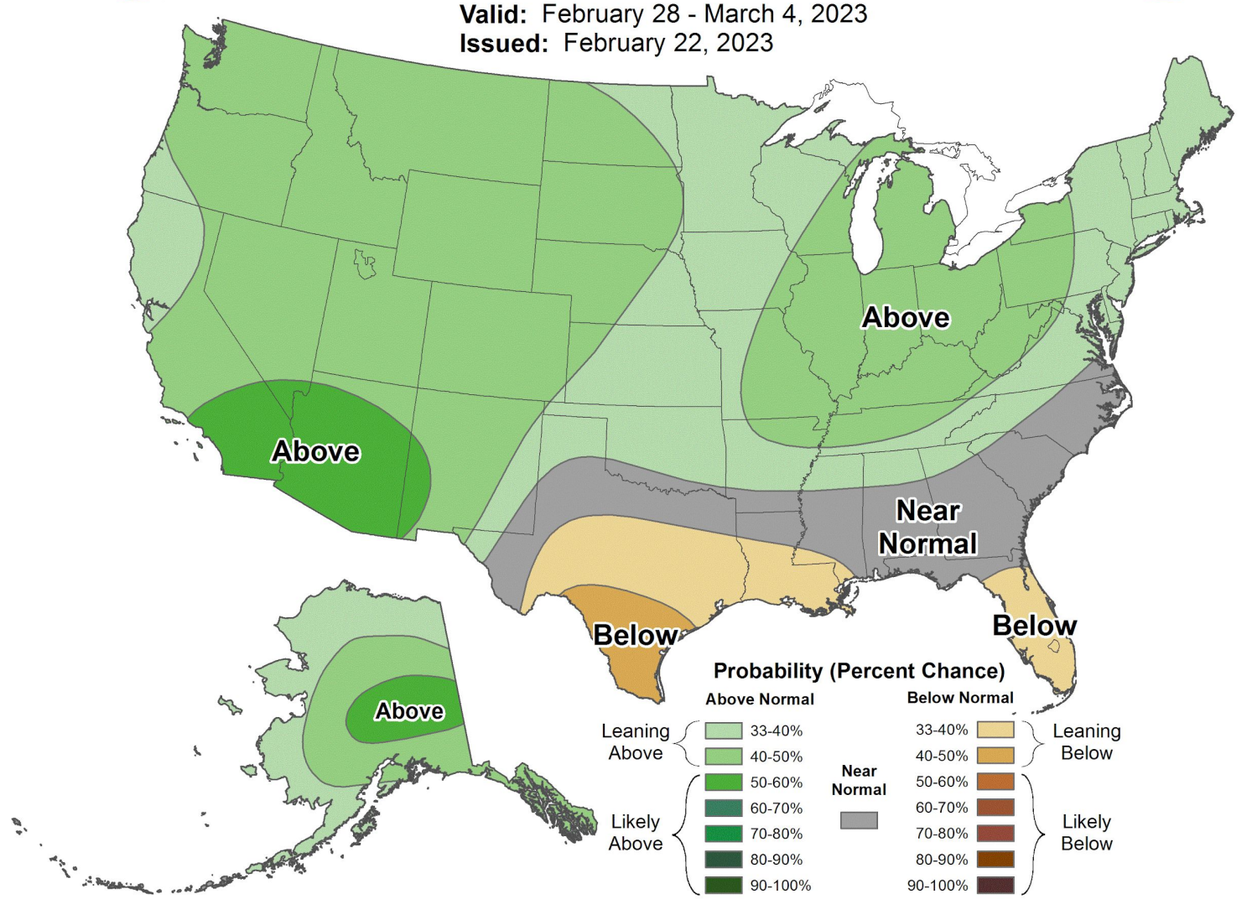
6-10 Day Temperature Outlook

Valid: February 28 - March 4, 2023
Issued: February 22, 2023



6-10 Day Precipitation Outlook

Valid: February 28 - March 4, 2023
Issued: February 22, 2023

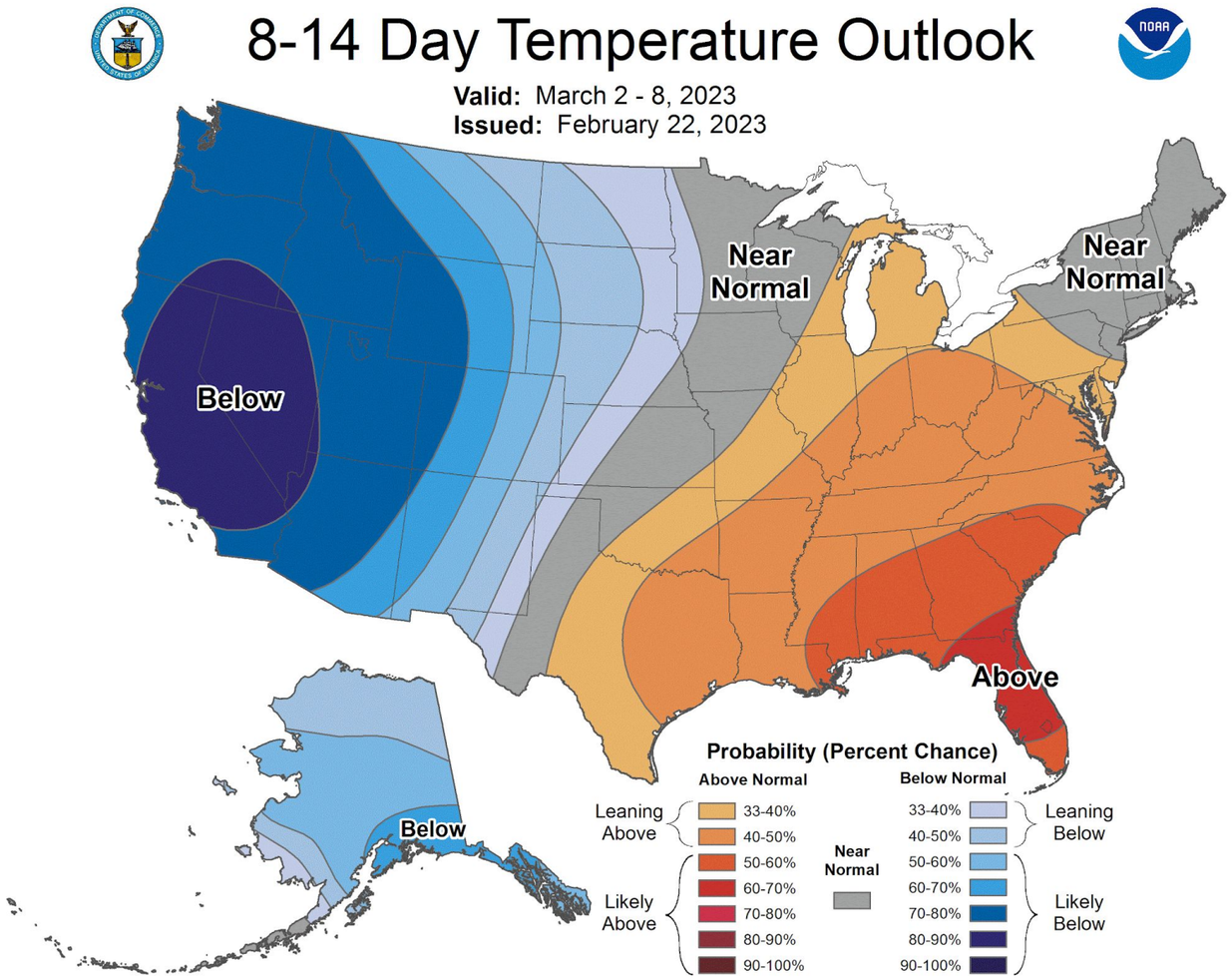


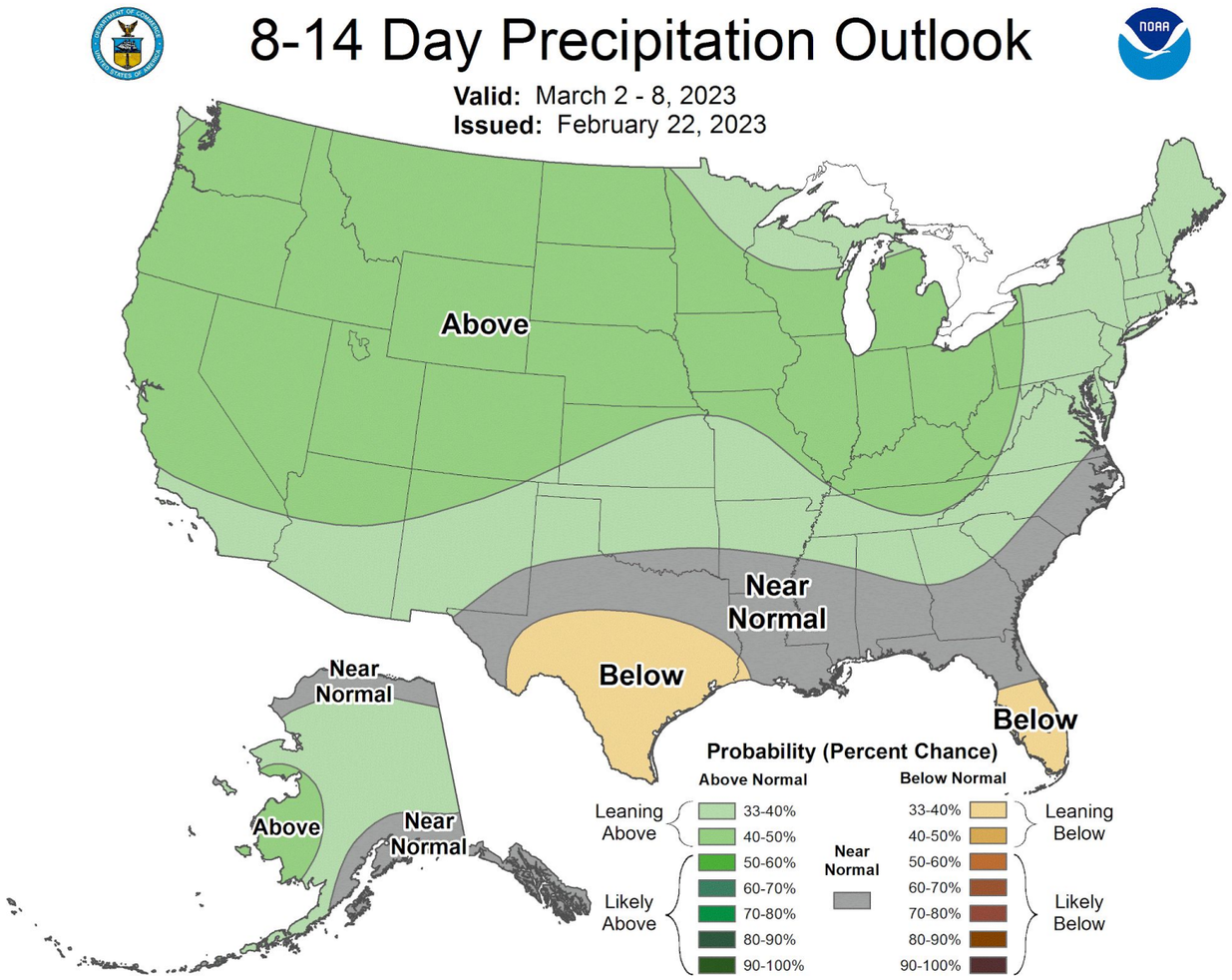
National Oceanic and Atmospheric Administration
U.S. Department of Commerce

National Weather Service
Iowa

Spring 2023 Flood Outlook for Iowa

8-14 day temperature and precipitation outlooks





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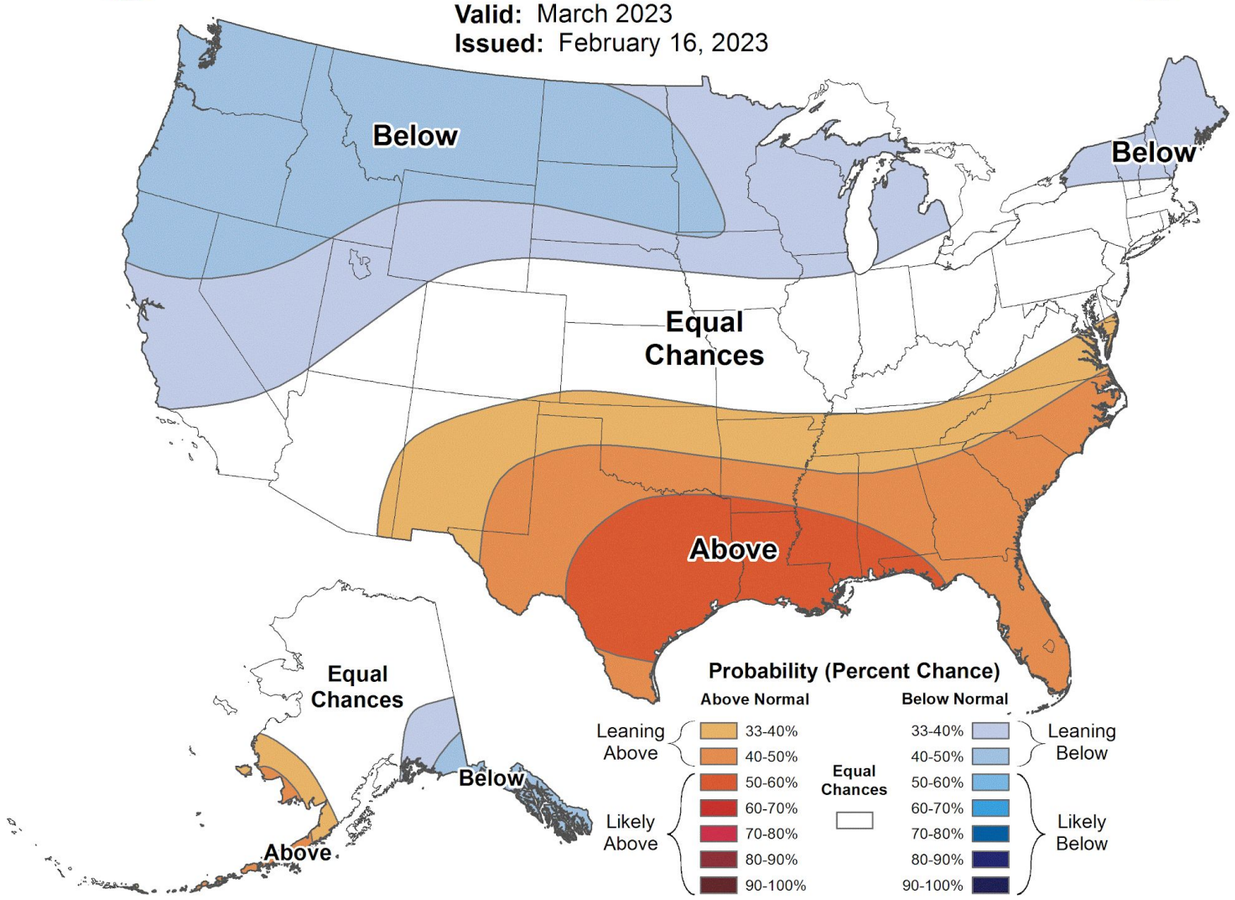
Monthly temperature and precipitation outlooks

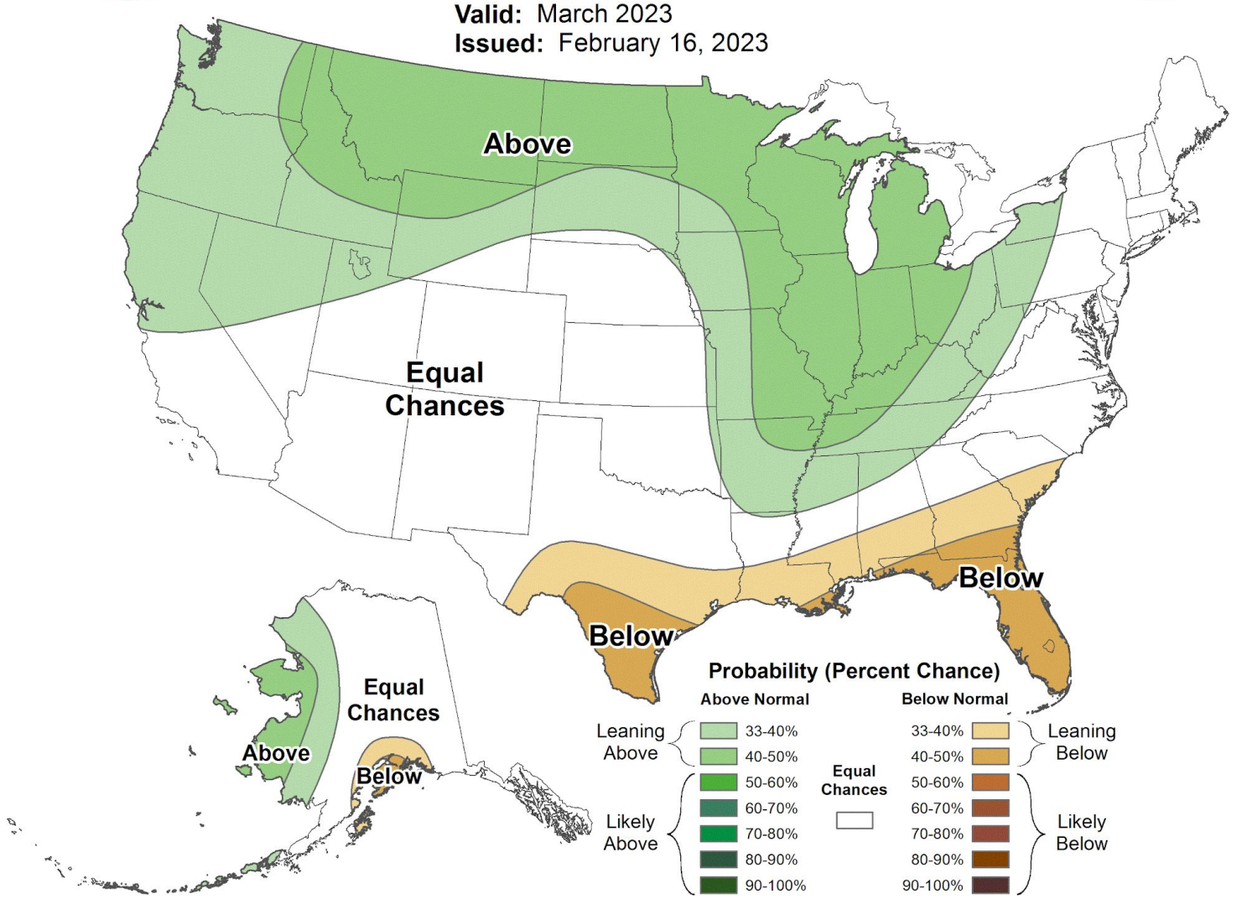
Monthly Temperature Outlook

Valid: March 2023
Issued: February 16, 2023



Monthly Precipitation Outlook

Valid: March 2023
Issued: February 16, 2023

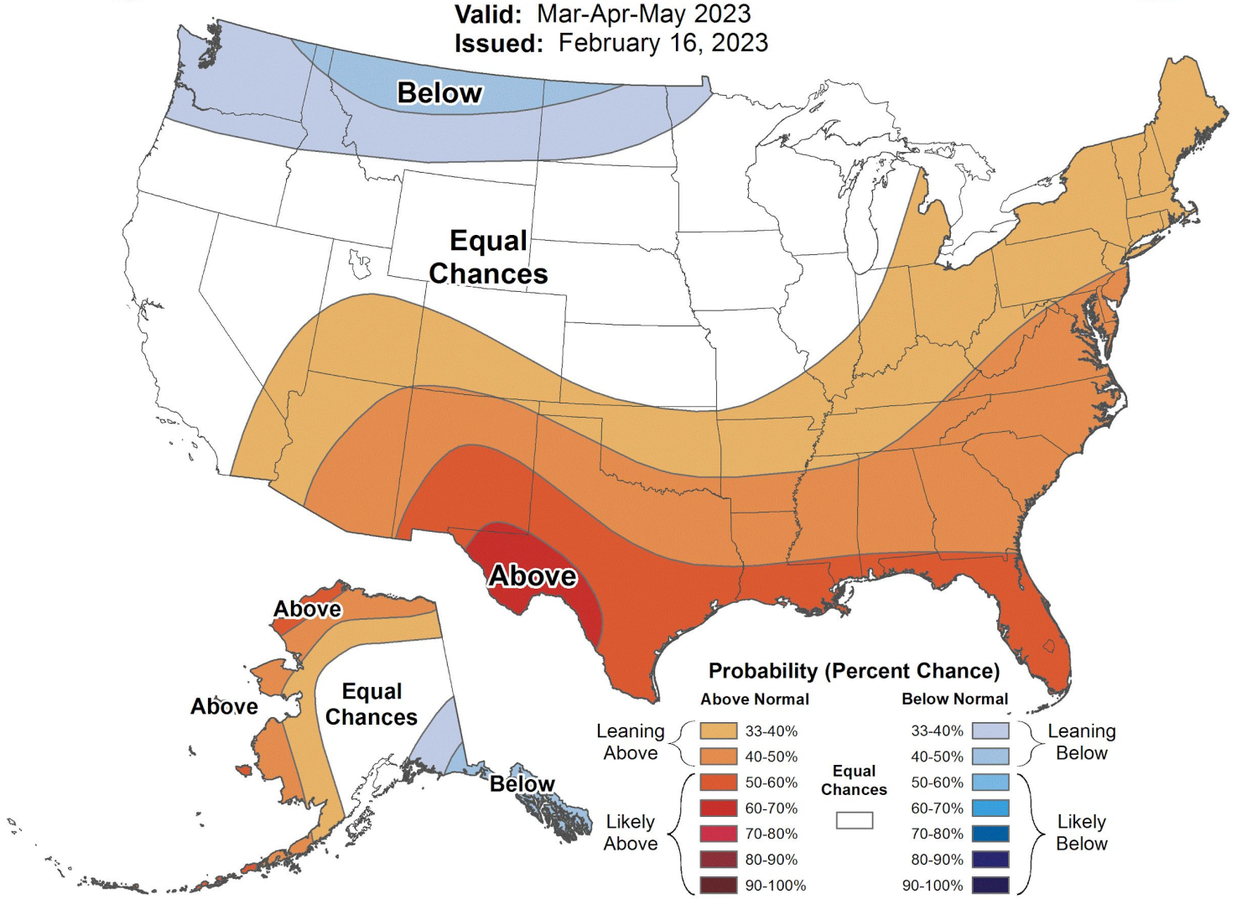


Spring 2023 Flood Outlook for Iowa

Seasonal temperature and precipitation outlooks

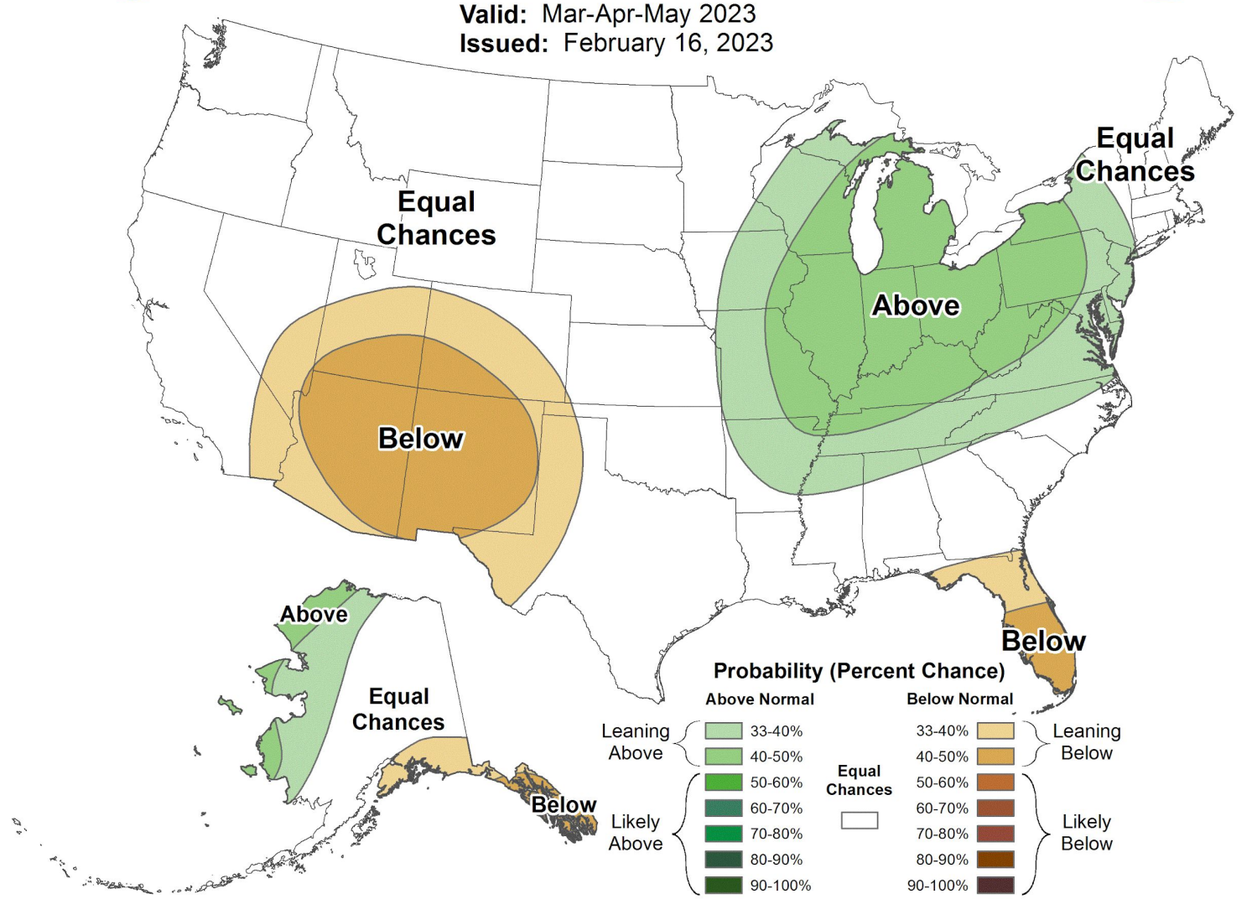
Seasonal Temperature Outlook

Valid: Mar-Apr-May 2023
Issued: February 16, 2023



Seasonal Precipitation Outlook

Valid: Mar-Apr-May 2023
Issued: February 16, 2023



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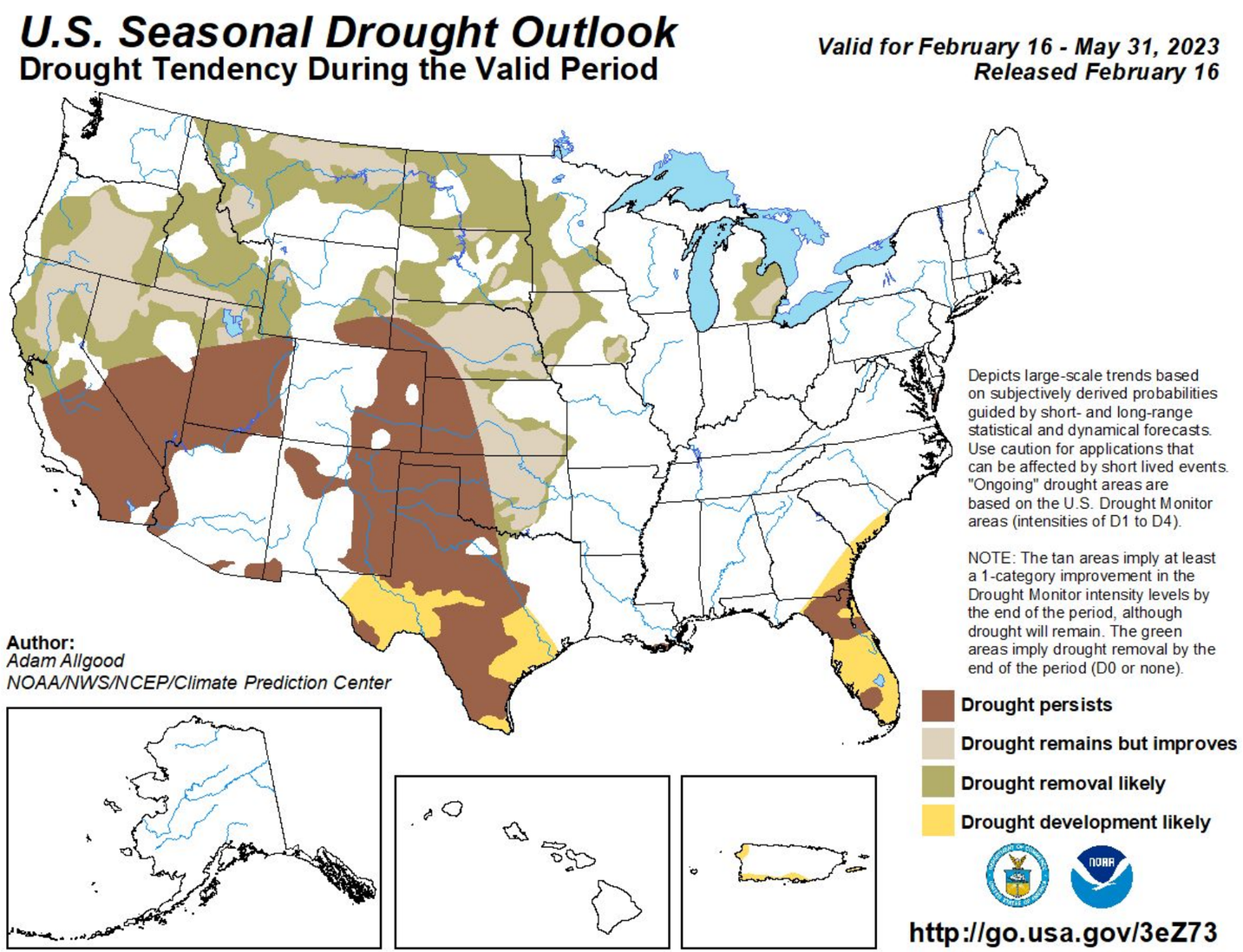
Seasonal drought outlook



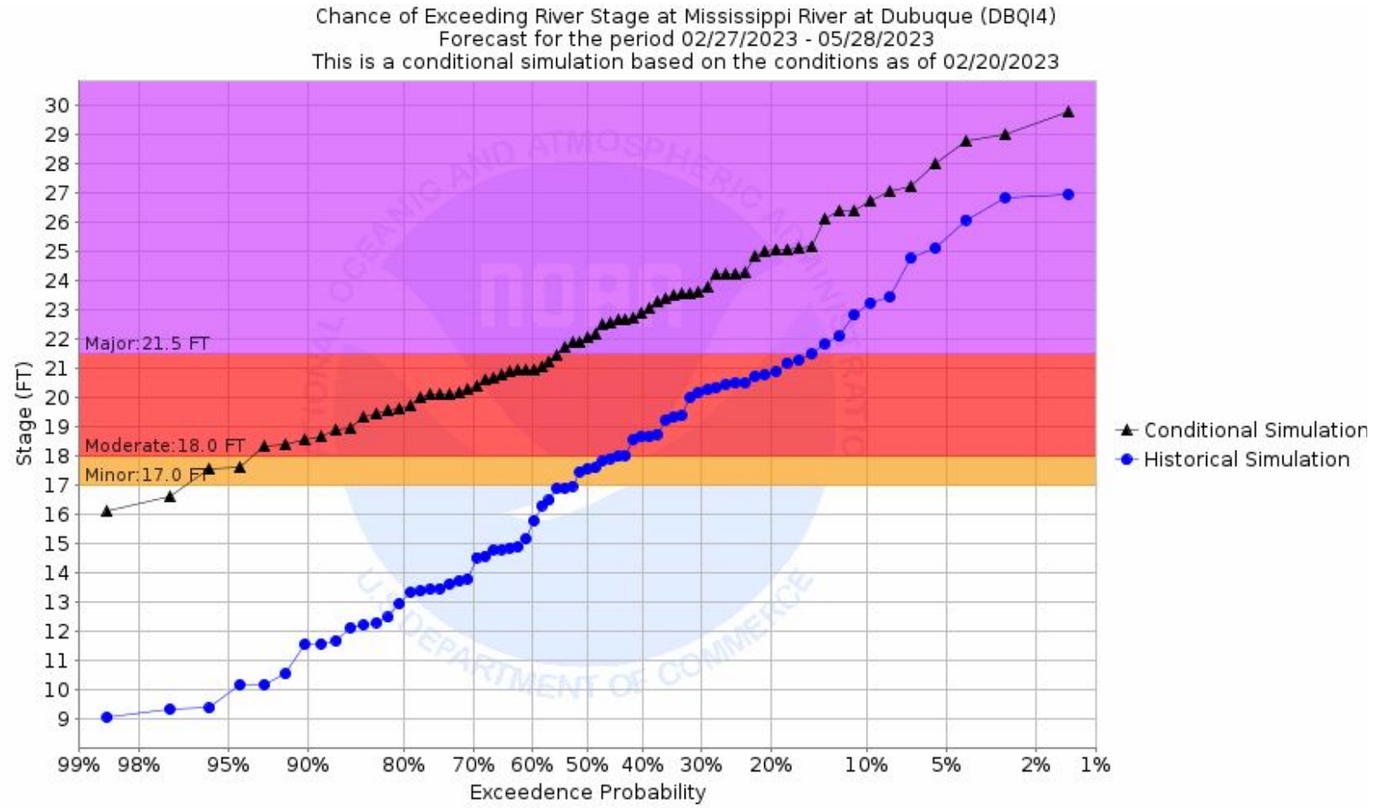
Drought conditions expected to improve across Iowa

Spring 2023 Flood Outlook for Iowa

Long-range probabilistic information–90-day period

Long Range Flood Risk (90-day period) – Available on AHPS

- Click on the Long-Range Flood Risk tab and select location of interest. Then under the Probability Information tab, select Chance of Exceeding Levels during Entire Period.
- The graph to the right represents the exceedance probabilities during the 90-day period.
- Blue line is considered the normal chance (i.e., climatology) – the historical simulation.
- Black line is based on current conditions (e.g., river levels, snowpack, etc.) – the conditional simulation.
- When the black line is to the left of the blue line, chances for higher river levels and flooding are higher than normal.
- Conversely, when the black line is to the right of the blue line, chances for higher river levels and flooding are lower than normal.



Example–Mississippi River at Dubuque

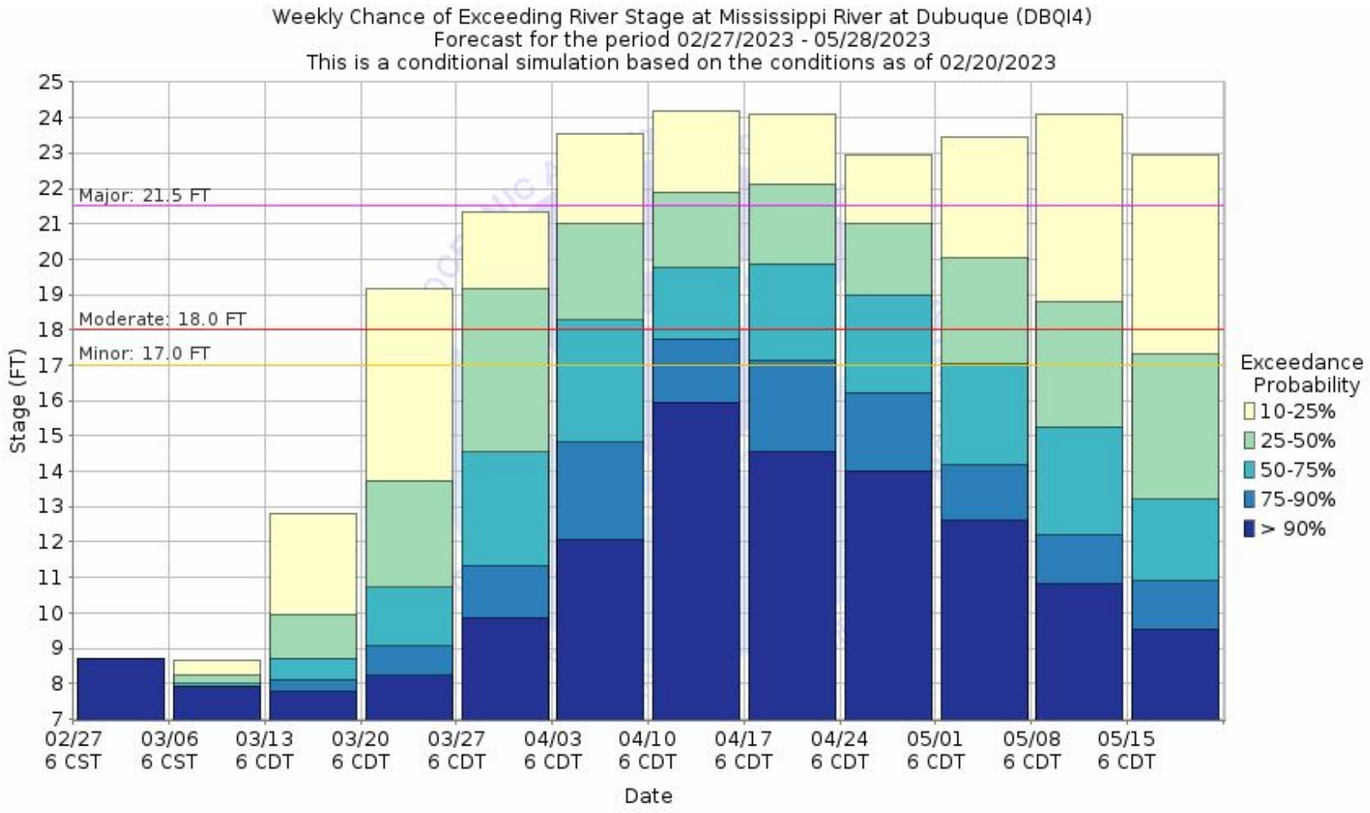
- Black line is to the left of the blue line (higher than normal chances).
- >95% chance of exceeding minor flood stage over the next 90 days.

Spring 2023 Flood Outlook for Iowa

Long-range probabilistic information–weekly chances during 90-day period

Long Range Flood Risk (weekly chances during 90-day period) – Available on AHPS

- Click on the Long-Range Flood Risk tab and select location of interest. Then under the Probability Information tab, select Weekly Chance of Exceeding Levels.
- The graph to the right represents the exceedance probabilities each week during the 90-day period.
- Yellow color of the bar graph represents the 10-25% exceedance probability.
- Essentially, there is a 10-25% chance that the river reaches that particular level during that particular week.
- The exceedance probabilities increase as colors become more blue–25-50% (light green), 50-75% (teal), 75-90% (light blue) and >90% (dark blue).



Example–Mississippi River at Dubuque

- Higher chances of flooding begin in early April, with the best chance of reaching minor flood stage in mid-April.

Spring 2023 Flood Outlook for Iowa

Flood risk by river as of 2/22/2023

River	Spring Flood Risk
Mississippi River above Rock River (in Illinois)	Above Normal
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Future weather–including amount and timing of precipitation as well as rate of snowmelt–can be big factors in any spring flood threat.

National Weather Service 2023 Spring Flood Outlook Schedule

2/9/2023

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Spring 2023 Flood Outlook for Iowa

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Below is the spring flood element checklist. The individual elements appear on the following slides. Future weather–including amount and timing of precipitation as well as rate of snowmelt–can be big factors in any spring flood threat. Heavy precipitation, rain on snow and a rapid snow melt will increase the risk. Little precipitation or a slow snow melt will lessen the risk. Flooding from ice jams is a minimal risk this year, but there may be some localized issues.

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Spring 2023 Flood Outlook for Iowa

Where to Find More Details

Each NWS office serving Iowa provides its own spring flood outlook information for its own service area. Below are the websites for the NWS offices serving Iowa.

- NWS Des Moines: weather.gov/desmoines
- NWS Quad Cities, IA/IL: weather.gov/quadcities
- NWS Sioux Falls, SD: weather.gov/siouxfalls
- NWS Omaha, NE: weather.gov/omaha
- NWS La Crosse, WI: weather.gov/lacrosse

For the latest river stage and forecast information, along with quantitative river flood outlook information, refer to the NWS Advanced Hydrologic Prediction Service (AHPS) Web site.